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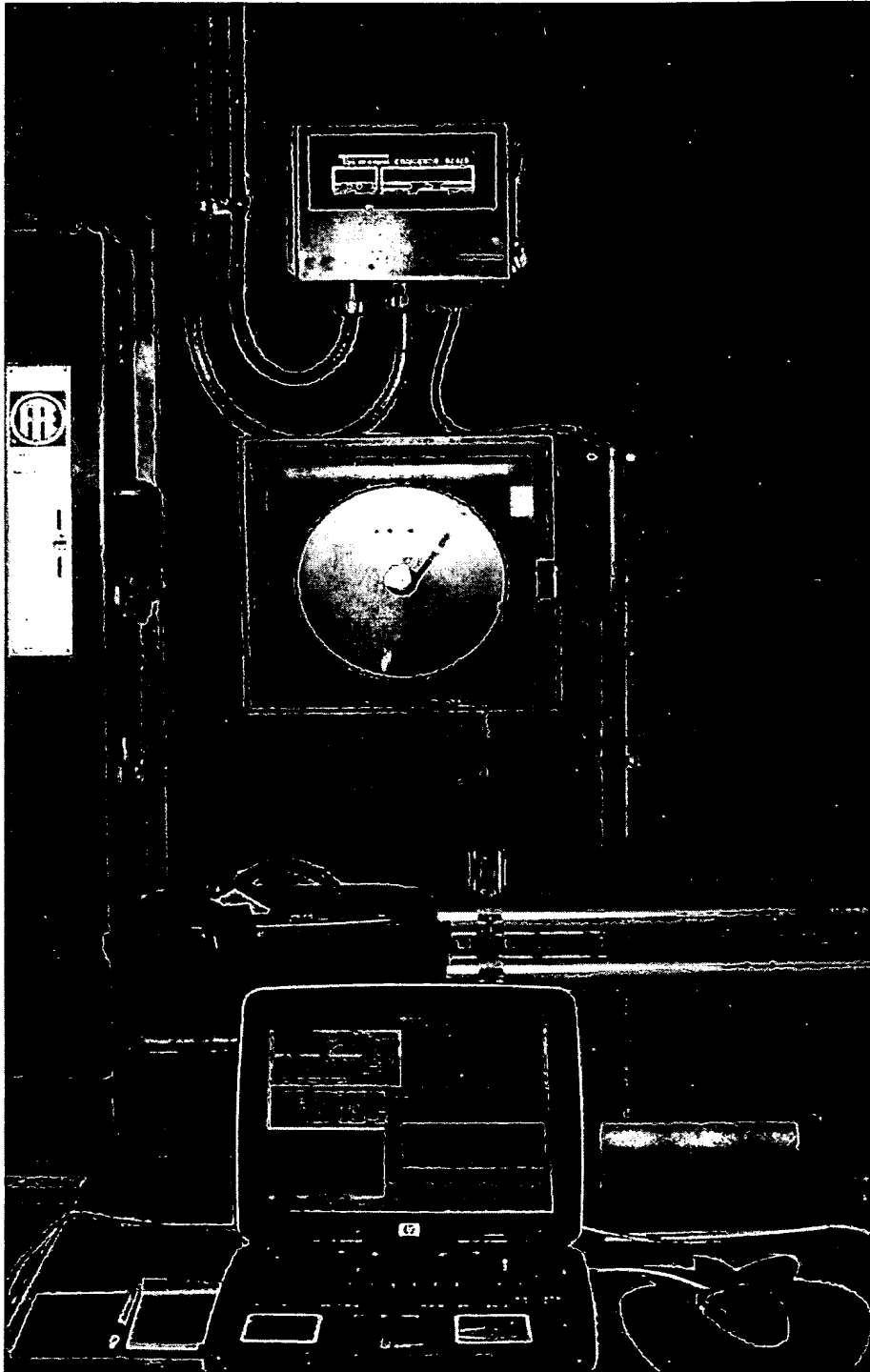
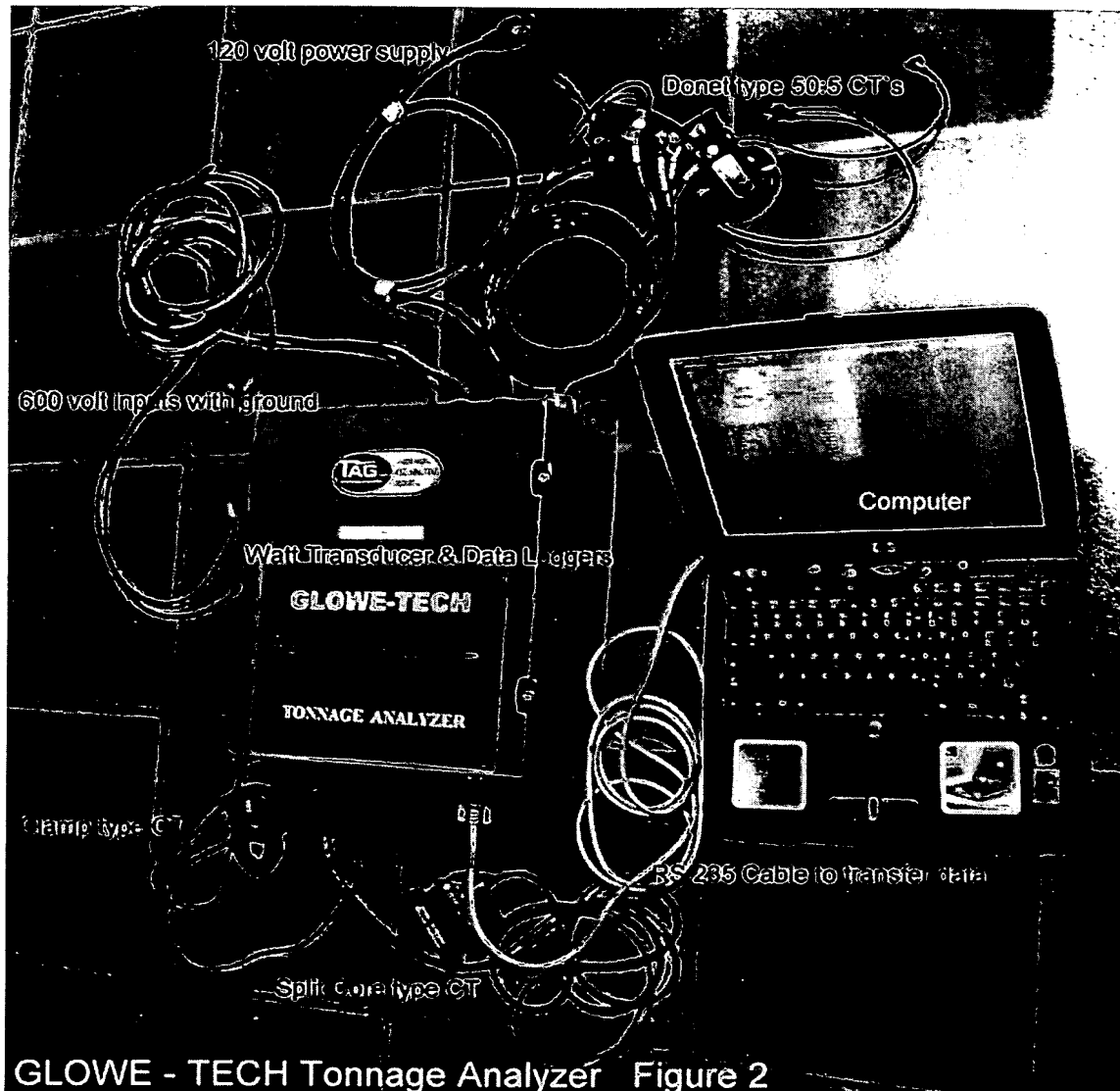


FIGURE 1

Typical set-up with computer recording live data converted to tonnage with belt scale monitor (top unit) showing actual tonnage moving over conveyor

FIGURE: 2



- Item 1: 600 volt input wires for line 1, 2 & 3 for watt transducer & ground wire
- Item 2: Donut type 50:5 CT's for current input to watt transducer
- Item 3: 120 volt power supply wire for watt transducer
- Item 4: Clamp type CT for ampere method to collect data for tonnage conversion
- Item 5: Split-Core CT for ampere method to collect data for tonnage conversion
- Item 6: Instrument case with Watt Transducer installed
- Item 7: Instrument case with ACR Data logger installed
- Item 8: RS235 Cable to transfer data to computer
- Item 9: Lap-top computer to collect data
- Item 10: Screen showing live data and for display of Real-Time graph of data in Tonnes converted from kilowatts or amps

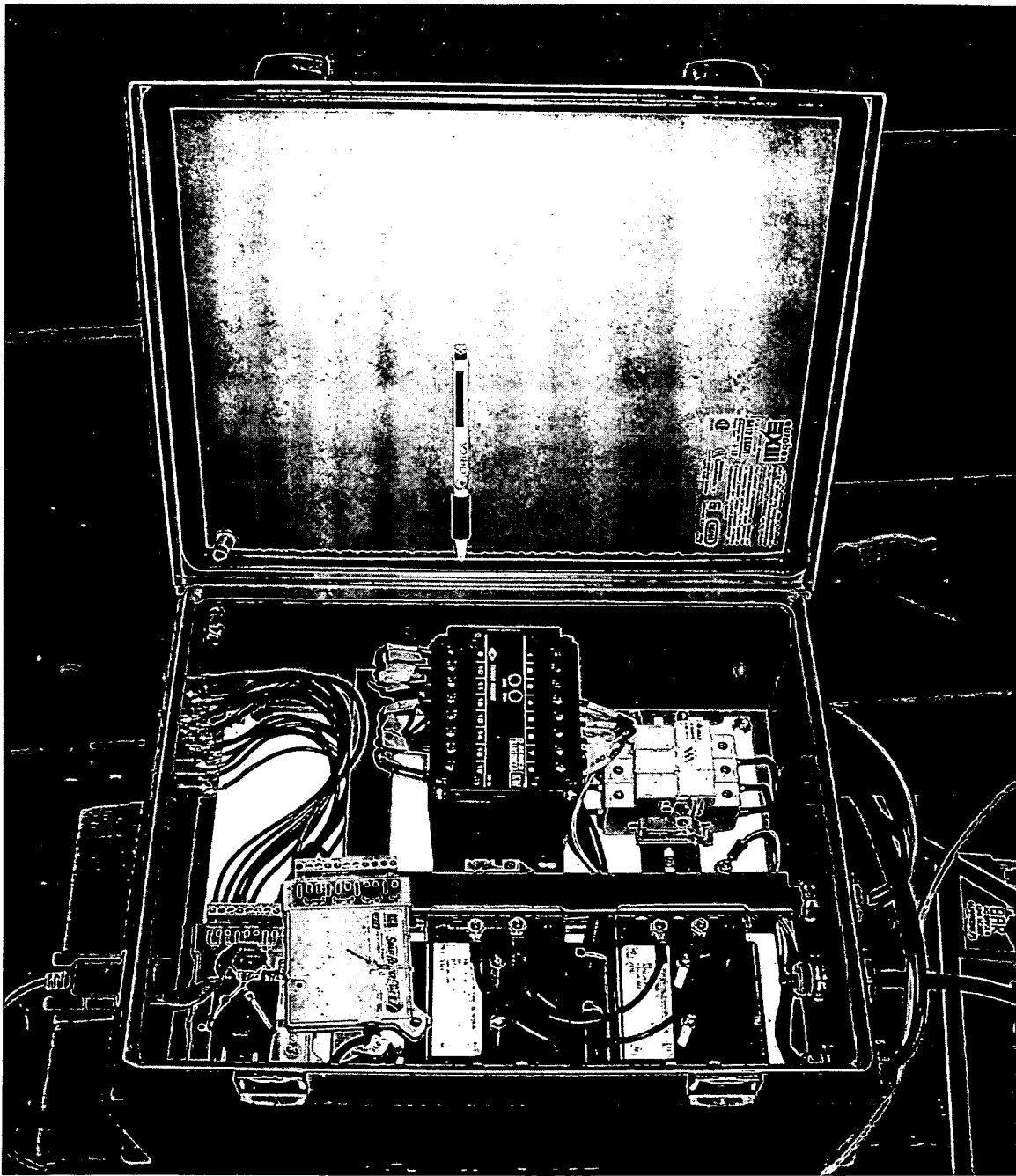


FIGURE 3:

GLOWE-TECH Tonnage Analyzer – Portable model with 2 Data Loggers capable of monitoring up to a total of 14 conveyor motors

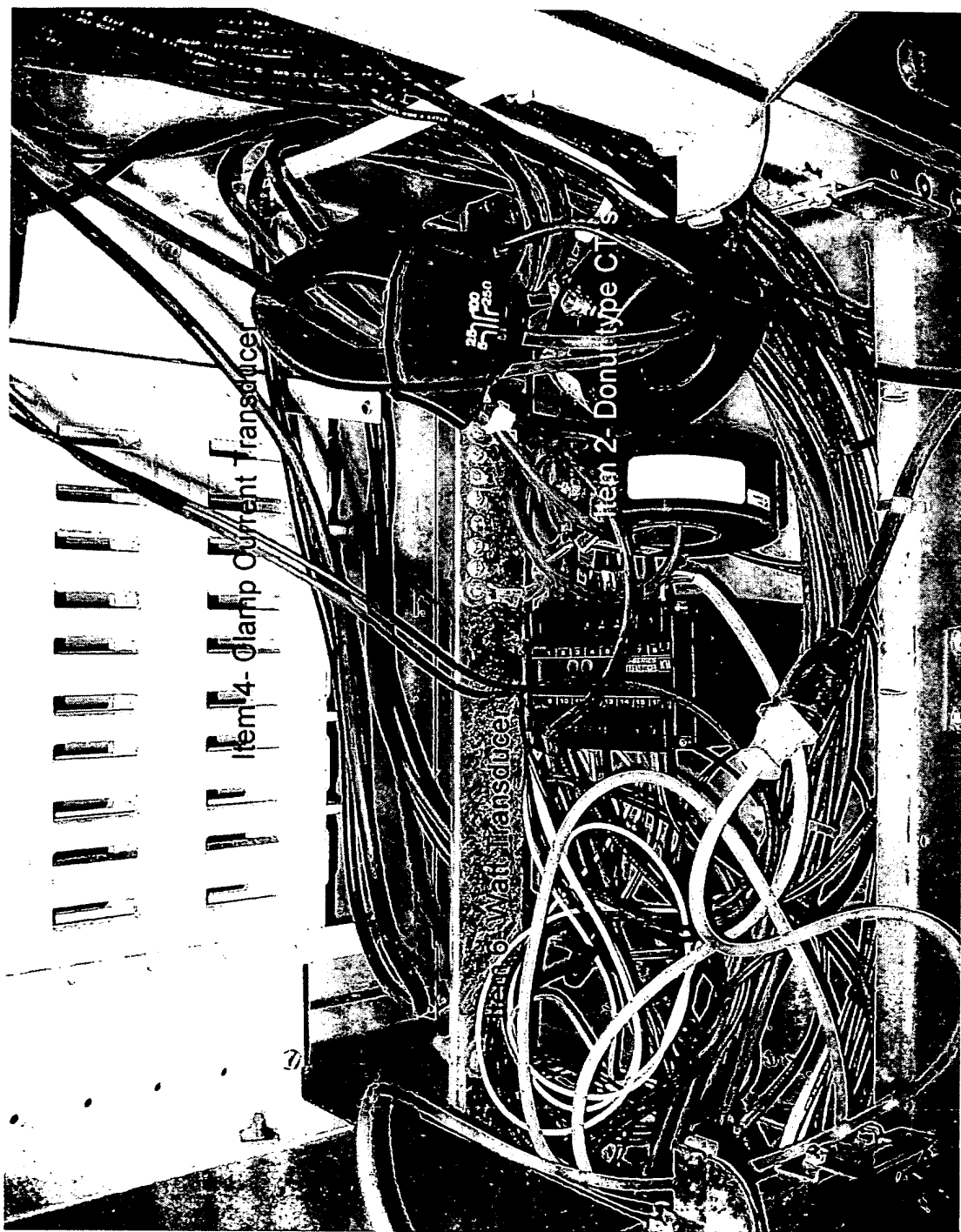
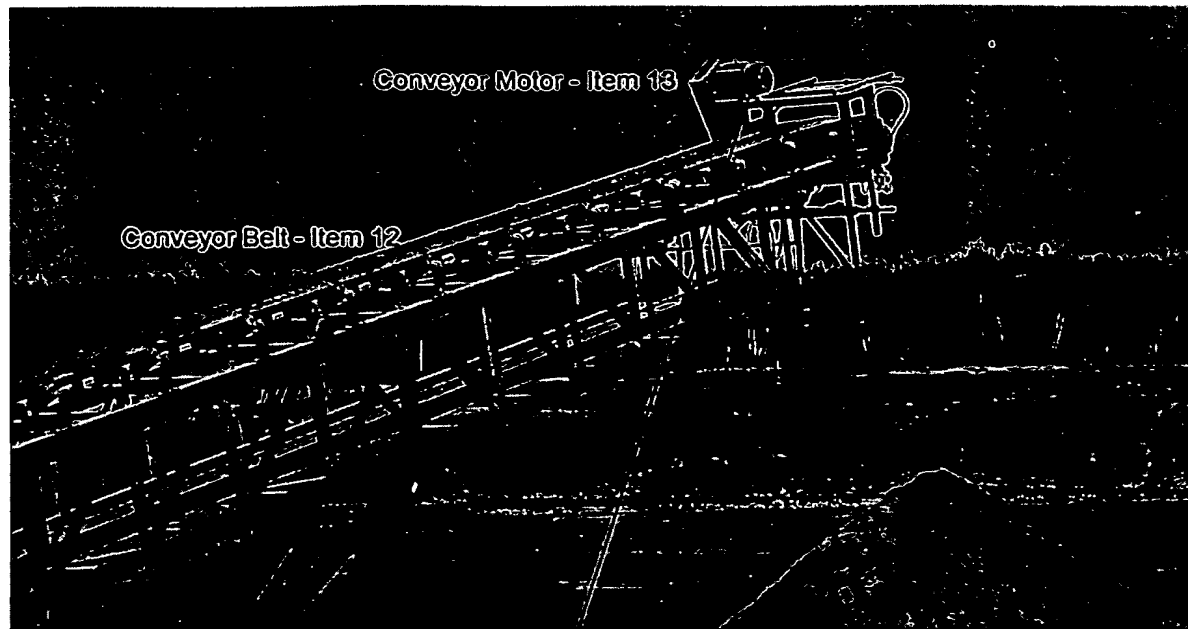


FIGURE 3b: Watt Transducer installation for Typical Conveyor Motor showing Clamp CT installed too



1

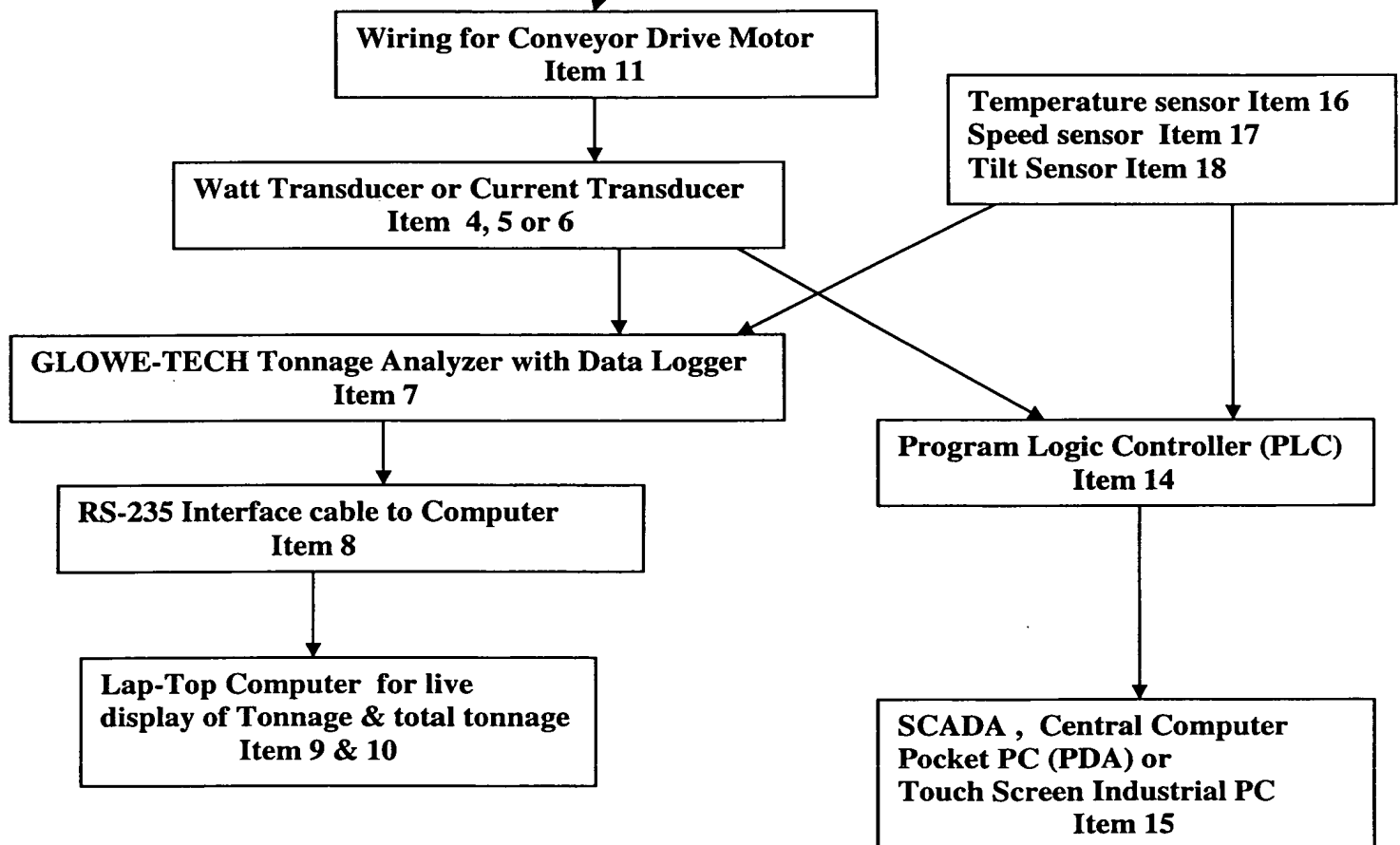


FIGURE: 4 Schematic of Typical Conveyor Belt Motor Tonnage Conversion

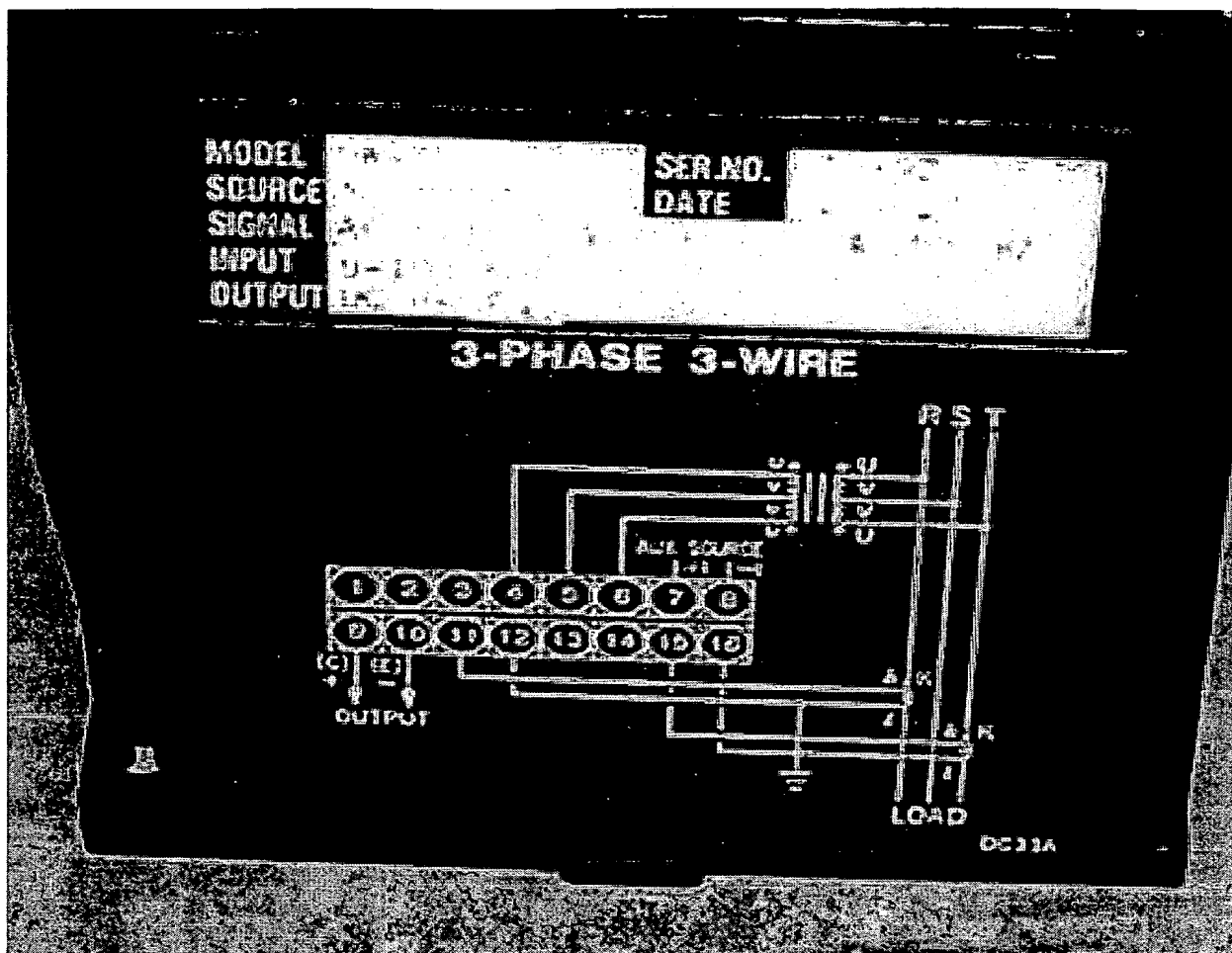
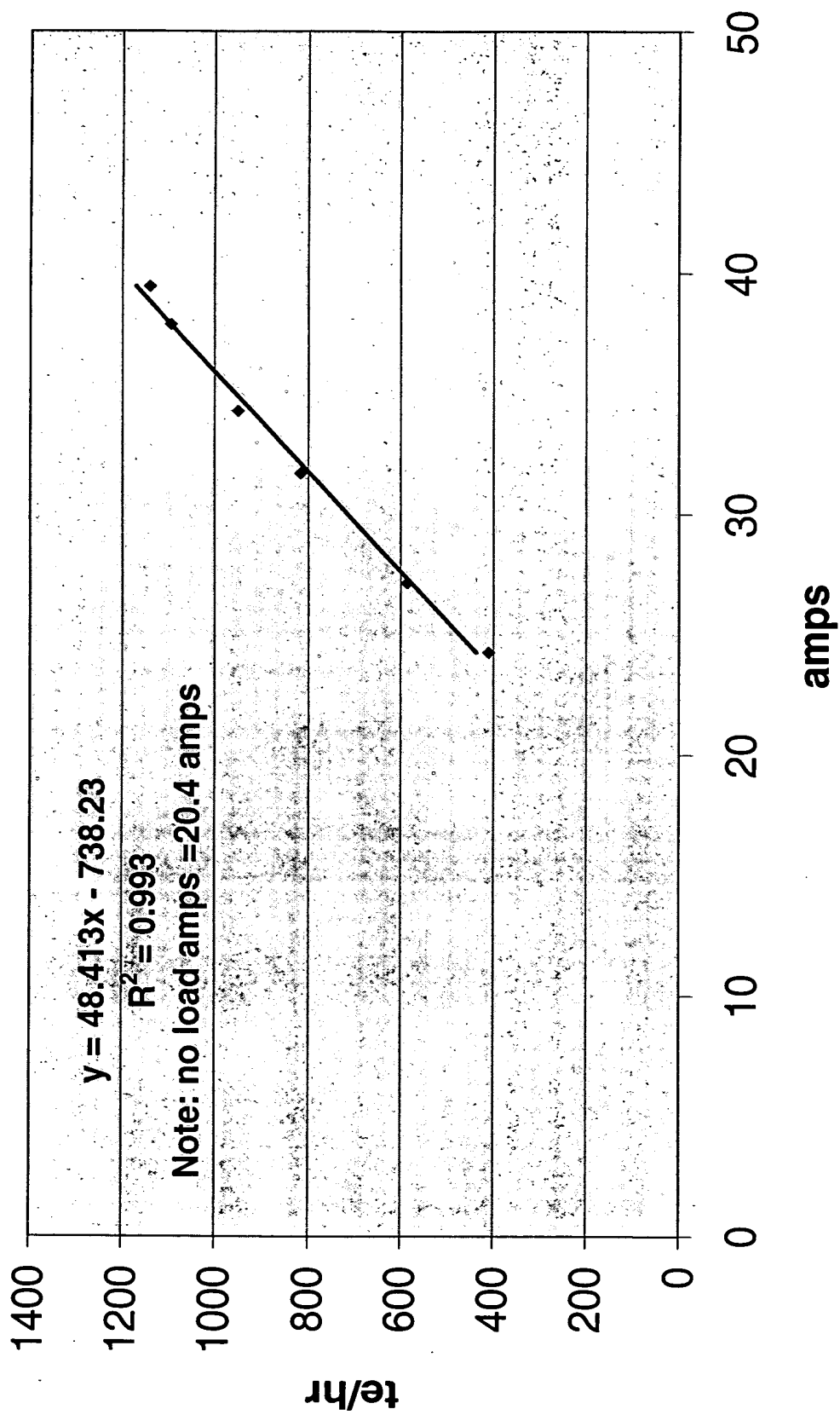


FIGURE: 5

GLOWE-TECH Typical wiring diagram for Watt Transducer

Graph amps to tonnes Figure: 6



Kwatts to tonnes Figure 7

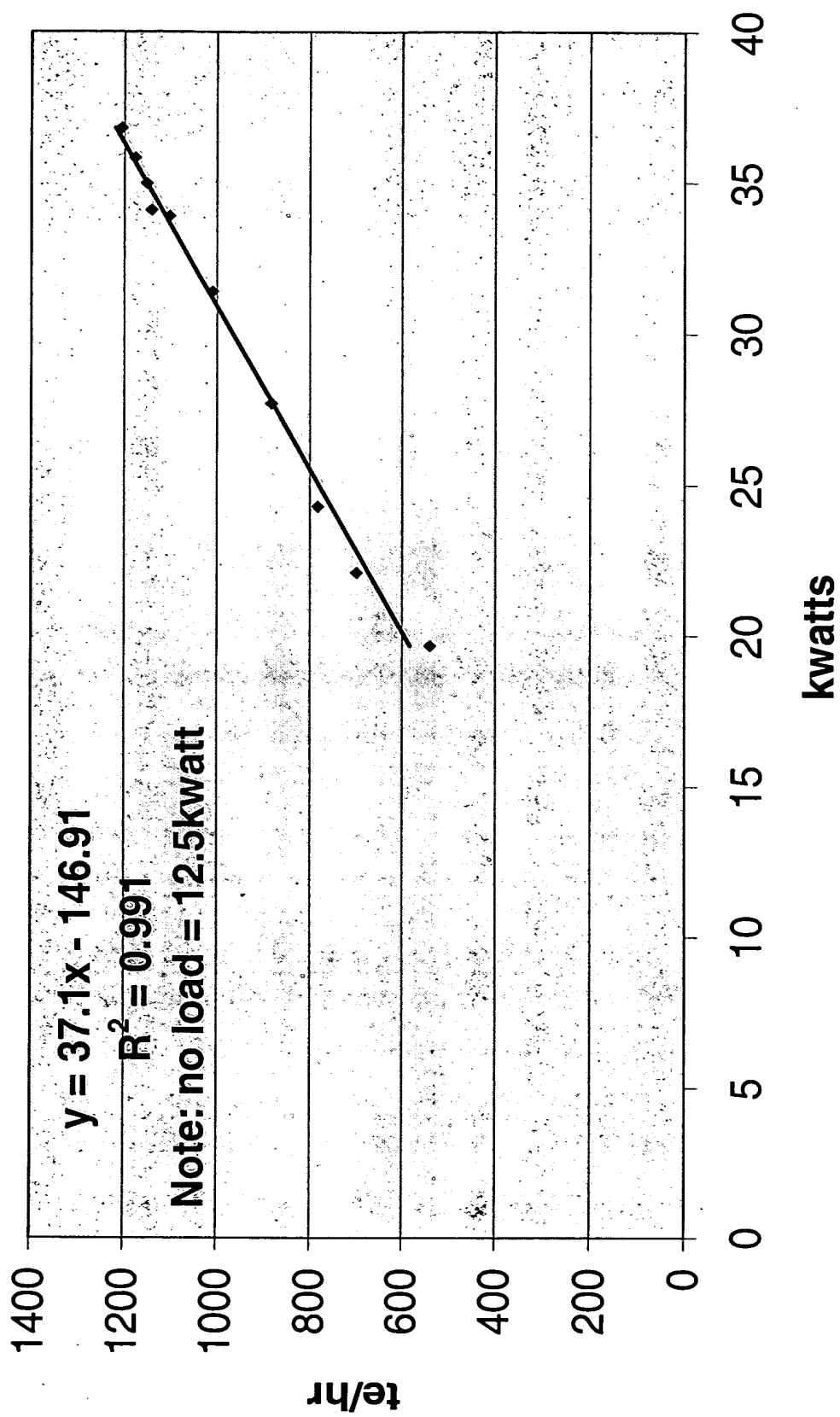


FIGURE: 8

Summary of Tonnage for Typical Conveyor using kwatts to tonnes

Date	Truck Count	actual Belt Scale tonnes	Corrected Belt Scale tonnes	kwatts conversion to tonnes	difference tonnes	amps conversion to tonnes	difference tonnes
15-Apr	126	6474.10	6474.10	6470.914	3.19	0	0
16-Apr	185	9552.40	9552.40	9404.079	148.32	9676.29	-123.89
17-Apr	145	7730.90	7730.90	7499.33	231.57	7753.309	-22.41
18-Apr	180	9451.50	9539.50	9412.356	127.14	9638.428	-98.93
19-Apr	166	8560.00	8665.00	8553.628	111.37	8737.455	-72.45
22-Apr	173	9138.00	9386.15	9447.105	-60.96	9465.383	-79.24
23-Apr	197	10453.00	10692.49	10717.322	-24.84	10323.369	369.12
24-Apr	159	7982.00	7982.00	8125.574	-143.57		
25-Apr	163	3705.00	3738.90	3773.876	-34.98		
26-Apr	164	8537.00	8757.00	8933.782	-176.78		
29-Apr	149	8150.00	8346.70	8418.175	-71.47		
30-Apr	156	8272.00	8482.00	8504.899	-22.90		
1-May	191	9901.00	10123.00	10138.142	-15.14		
2-May		10552.90	10758.00	10777.447	-19.45		
TOTAL		118459.80	120228.13	120176.629	51.50		

NOTE: Belt Scale tonnage was corrected for tonnage being added from April 18 to April 24th then taking off tonnage due to removal of rock end April 24 which had fallen on belt scale

NOTE: Apr 24 to May 2 scale was taking tonnes from scale display at 15 to 25 te/hr

NOTE:kwatt calibration formula used as per graph is $37.1x - 146.91$ for all readings April 15 to May 2

NOTE: Amp calibration formula used as per graph is $48.413x - 738.13$ for all readings

FIGURE 8b

Comparison Table showing difference in GLOWE-TECH Tonnage Analyzer Readings with Milltronics Belt Scale Readings

Date	Operating Time hours	No-Load time hours	Start-Up time hours	Production time-hours	Milltronics tonnes	GT Analyzer tonnes	Difference tonnes	difference %
6-May-02	7.367	1.813	0.064	5.490	2830.000	2769.730	60.270	2.13
7-May-02	10.930	2.176	0.196	8.558	4374.000	4377.165	-3.165	-0.07
8-May-02	7.117	1.796	0.027	5.294	2791.000	2776.820	14.180	0.51
9-May-02	6.830	1.187	0.116	5.527	3119.500	3096.503	22.997	0.74
10-May-02	10.650	1.242	0.044	9.364	4494.000	4531.777	-37.777	-0.84
13-May-02	10.430	7.158	0.007	3.265	1845.900	1888.235	-42.335	-2.29
14-May-02	8.817	5.402	0.031	3.384	1866.000	1866.000	0.000	0.00
15-May-02	10.867	1.502	0.080	9.285	4659.000	4680.243	-21.243	-0.46
16-May-02	11.033	2.380	0.011	8.642	4563.000	4582.861	-19.861	-0.44
17-May-02	9.067	1.620	0.009	7.438	3799.000	3761.421	37.579	0.99
20-May-02	8.967	1.389	0.009	7.569	3792.000	3791.384	0.616	0.02
21-May-02	10.883	1.778	0.009	9.096	4226.000	4199.993	26.007	0.62
22-May-02	10.750	1.620	0.138	8.992	3925.000	3921.740	3.260	0.08
23-May-02	7.880	1.311	0.009	6.560	3261.000	3206.395	54.605	1.67
TOTAL	131.588	32.374	0.750	98.464	49545.400	49450.267	95.133	

Note: Data taken from a conveyor belt feeding a secondary crusher.

Note: Potential of up to 33.124 hours of new production available in recording period.

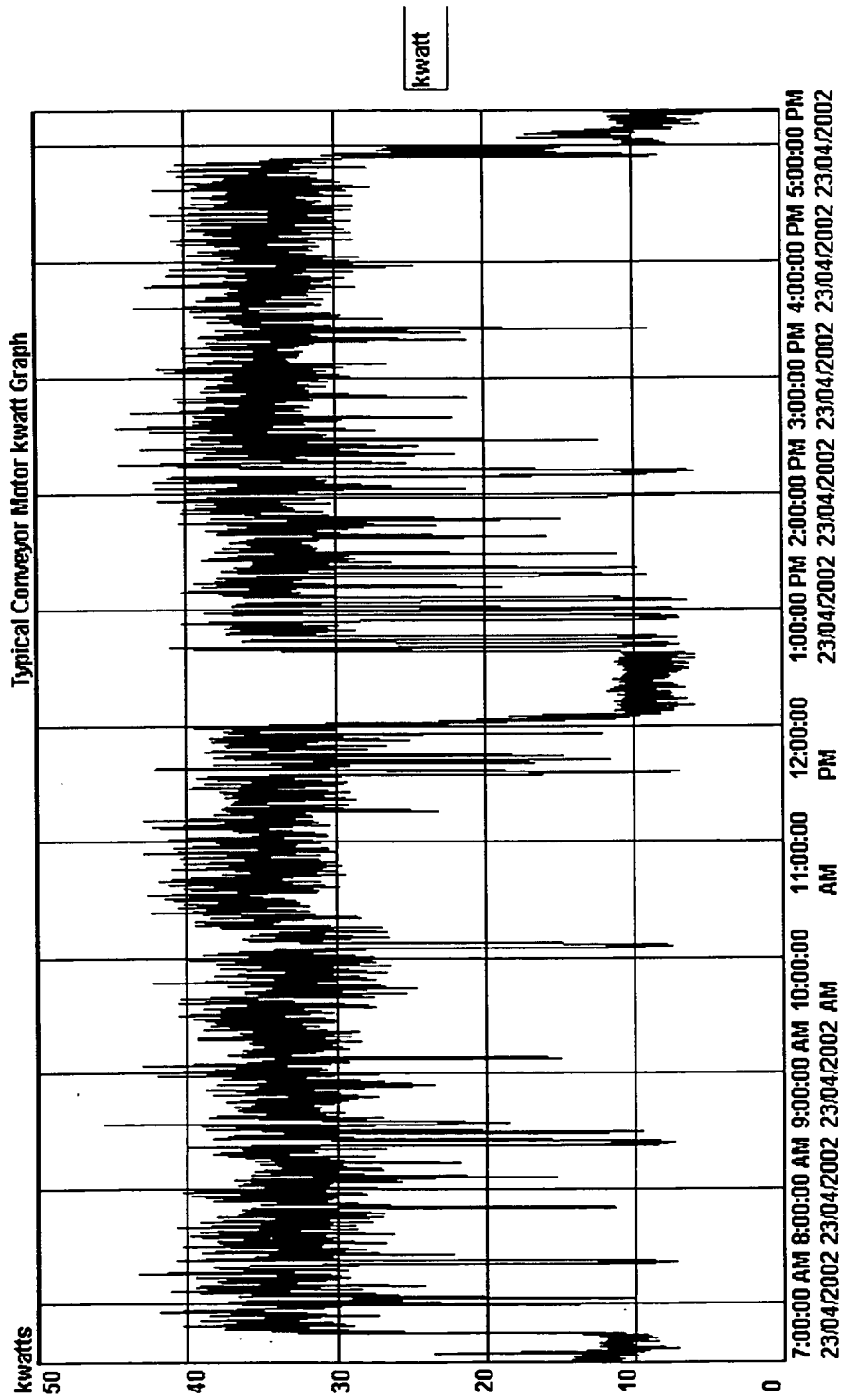


FIGURE: 9 kilowatt graph

TYPICAL Quarry Kwatts Converted to Tonnage Summary report

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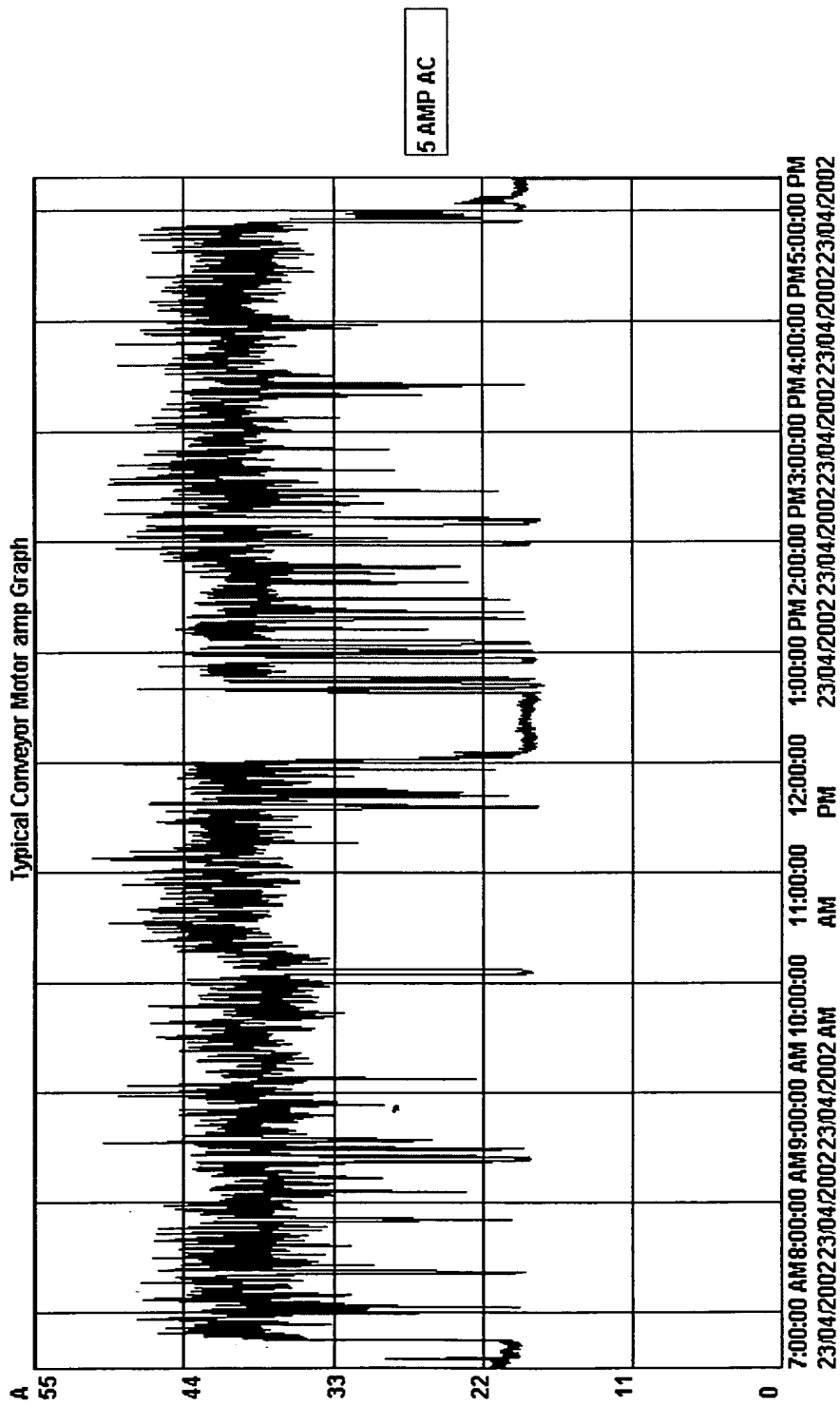


FIGURE: 11 amp Graph

TYPICAL Quarry Amps to tonnage Summary

FIGURE 12

Temperature	am	9.000	degrees C
Temperature	pm	15.000	degrees C
<div> <div>No load current = 25.000</div> <div>Start up current = 80.000</div> </div>			
Time no load amps	69.33 minutes	1.156 hours	
Time at start-up amps	5.87 minutes	0.098 hours	
Total Recording Time	11.709 hours	10.553	total hr production
Average current for day =	66.787		amps
Average Tonnage by formula =	496.592		tonnes
Total tonnes by Instrument	5240.756		tonnes
Total tonnes by scale	5184.000		tonnes
Difference	-56.756 tonnes		
		5240.7003 tonnes totalized	
		-56.700 tonnes	

		Count >					
Time of reading	Actual Amps	Count no load	startup Amps	Conditioned Amps	Tons/hour on conveyor	Tons/hr on conveyor	
12/02/2003 6:00:04	20.30774	1	0	0			
12/02/2003 6:00:12	20.26378	1	0	0			
12/02/2003 6:00:20	20.26378	1	0	0			
BREAK							
12/02/2003 17:41:00	60.22648	0	0	60.226	428.974	0.9533	
12/02/2003 17:41:08	59.25929	0	0	59.259	419.006	0.9311	
12/02/2003 17:41:16	60.71008	0	0	60.710	433.959	0.9644	
12/02/2003 17:41:24	60.00667	0	0	60.007	426.709	0.9482	
12/02/2003 17:41:32	56.31374	0	0	56.314	388.646	0.8637	
12/02/2003 17:41:40	52.79667	0	0	52.797	352.395	0.7831	
12/02/2003 17:41:48	46.77369	0	0	46.774	290.316	0.6451	
12/02/2003 17:41:56	42.99284	0	0	42.993	251.347	0.5585	
12/02/2003 17:42:04	37.45346	0	0	37.453	194.253	0.4317	
12/02/2003 17:42:12	32.52956	0	0	32.530	143.502	0.3189	
12/02/2003 17:42:20	27.60566	0	0	27.606	92.752	0.2061	
12/02/2003 17:42:28	24.57219	1	0	0			

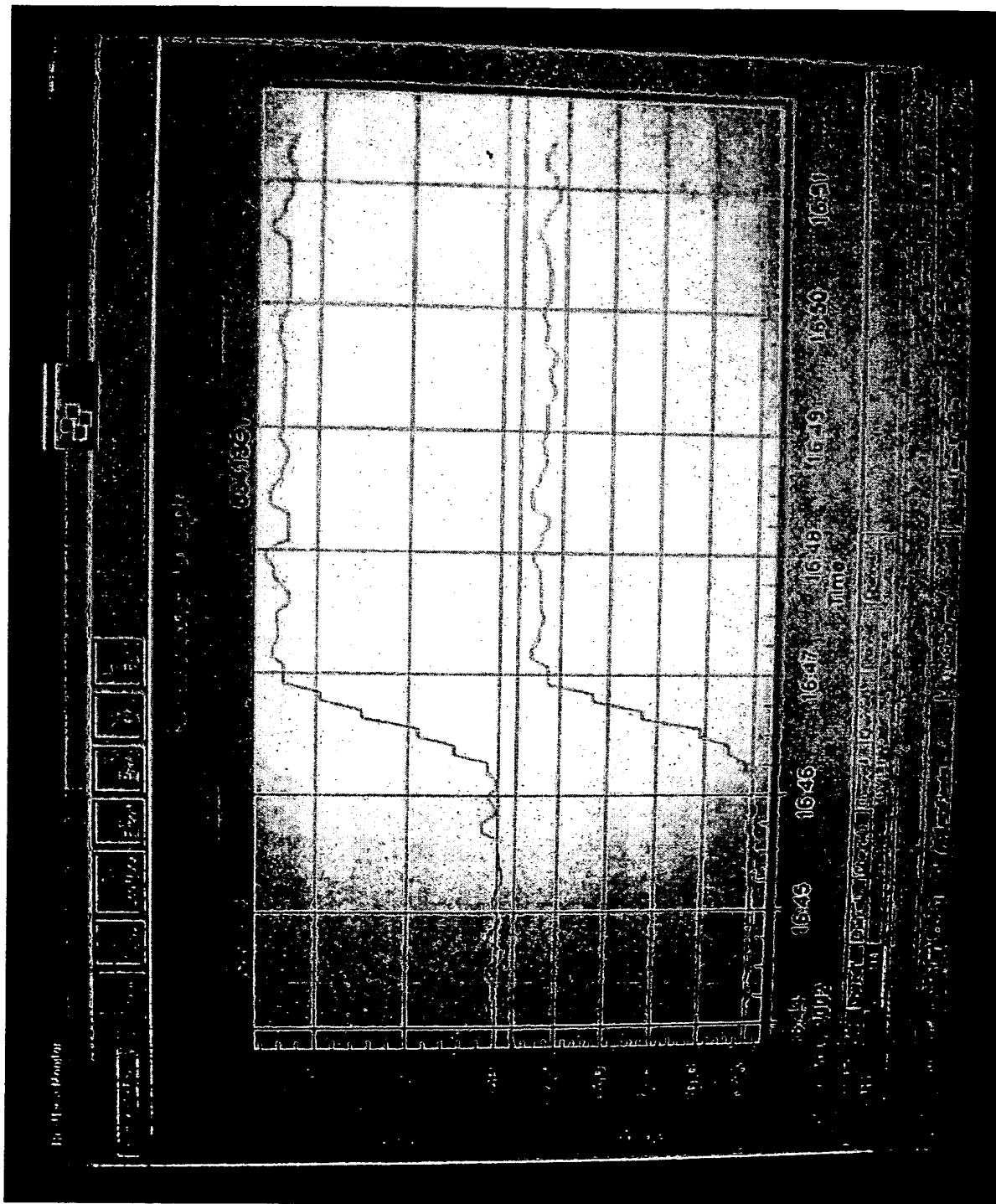


FIGURE 13a: - Typical Real Time Graph showing te/hr converted from Watt Transducer and a Real Time Graph of Amperage readings from the same Conveyor motor for parallel conversion to Tonnage for demonstration purposes.

File Edit View Insert Format Tools Data Window Help										
A	B	C	D	E	F	G	H	I	J	K
1	Typical Daily conversion kilowatts to tonnes Aug 6, 2003									
2						Calibration Formulas				
3						655.406 Ideal Formula Number				
4	No load kwatt		Motor	7.403 kwatts		590.903 01/08/2018, formula 1				
5	Peak kwatts			33.800 kwatts		631.737 01/09/2015, formula 2				
6	Time No-Load kwatt		10.667 minutes	0.178 heures		652.916 Jun 20.03, Formula 3				
7	Time Start-Up kwatts		0.000 minutes	0.000 heures						currently used
8	Total Production time		3.536 hours	3.358 heures						
9	Average kwatt for day		Motor	26.412 kwatts		No-Load Original reading		7.300 kwatts		
10	Average Tonnage by formula			649.772 te/hr		New No-Load reading		7.403 kwatts		
11						649.772 New Formula		-0.103 kwatts difference		
12	Tonnage by belt scale			2201.000 tonnes est						
13	Total tonnage by GT analyzer =			2182.077 tonnes		2182.345 tonnes based on original formula				
14	Difference			18.923 tonnes		8.655 tonnes difference				
15	Percentage difference			0.860 %		0.393 %				
16	Time of data					te/hr		No-Load Reading		
17	Reading	Actual kwatt	Count	Conditioned	tonnes/hr on	totalized	No-Load Time			
18	05/08/2003 6:16:26	-0.07618	1	kwatt	conveyor		05/08/2003 7:19:22	7.03132	6.965 Average kw	
19	05/08/2003 6:16:34	10.84231	0				05/08/2003 7:19:30	7.12659	0.293 Std dev	
20	05/08/2003 6:16:42	12.56725	0				05/08/2003 7:19:38	7.62202	7.403 1.5 std dev	
21	05/08/2003 6:16:50	14.48180	0				05/08/2003 7:19:46	6.95510	7.550 2.0 std dev	
22	05/08/2003 6:16:58	17.18760	0				05/08/2003 7:19:54	6.95510		
23	05/08/2003 6:17:06	20.75088	0				05/08/2003 7:20:02	7.16470		
24	05/08/2003 6:17:14	25.01919	0				05/08/2003 7:20:10	7.08943		
1593	05/08/2003 9:46:34	29.17316	0							
1594	05/08/2003 9:46:42	29.02073	0							
1595	05/08/2003 9:46:50	28.52530	0							
1596	05/08/2003 9:46:58	28.54435	0							
1597	05/08/2003 9:47:06	30.27835	0							
1598	05/08/2003 9:47:14	29.34466	0							
1599	05/08/2003 9:47:22	30.41174	0							
1600	05/08/2003 9:47:30	29.49710	0							
1601	05/08/2003 9:47:38	28.08703	0							
1602	05/08/2003 9:47:46	29.36371	0							
1603	05/08/2003 9:47:54	29.30655	0							
1604	05/08/2003 9:48:02	29.11600	0							
1605	05/08/2003 9:48:10	29.19222	0							
1606	05/08/2003 9:48:18	29.00167	0							
1607	05/08/2003 9:48:26	29.38277	0							
1608			1							

Full Screen
Close Full Screen

Microsoft Excel - Figu...

Figure 13b: Calibration...

Patent Application Re...

Patent Files

11:03 AM

Figure 13b Typical Daily Summary Table with Stable No-Load reading

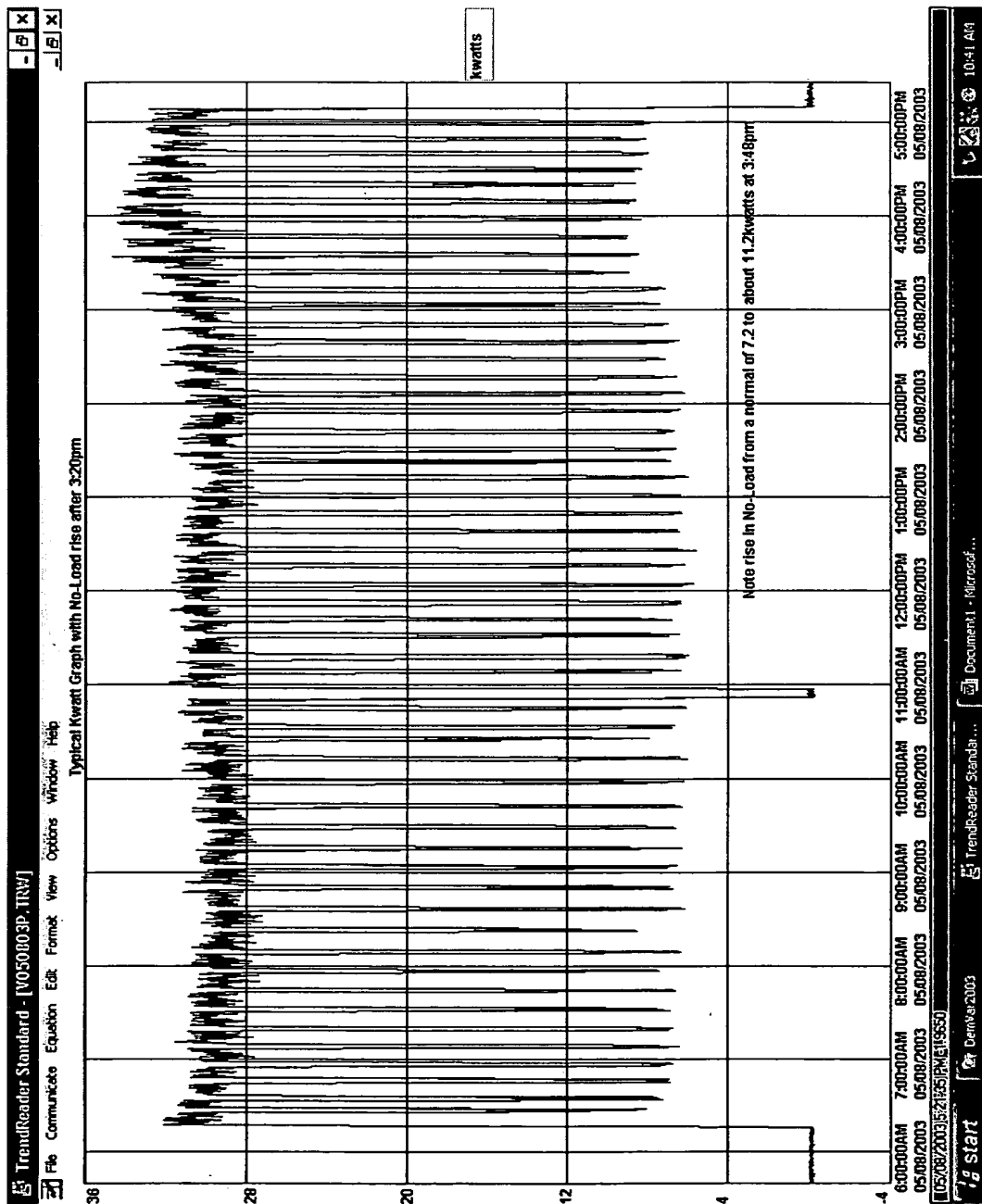


FIGURE 13d Typical Kilowatt Graph showing effect of change in No-Load caused by Friction on return side of Conveyor

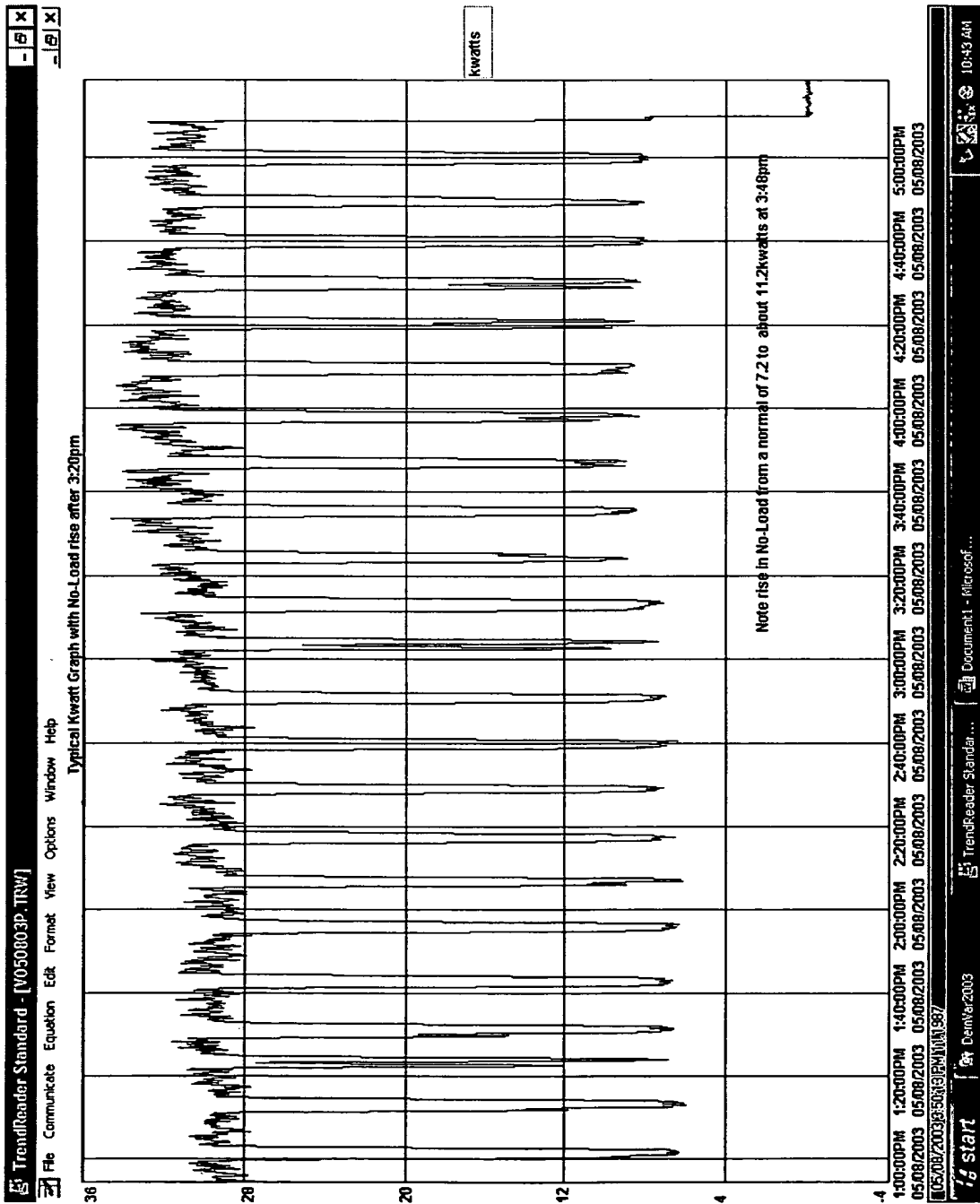


Figure 13e Enlarged view of change in No-Load readings caused by friction on Return Conveyor belt

File Edit View Insert Format Tools Data Window Help										
A	B	C	D	E	F	G	H	I	J	K
1	Figure 13f Typical Daily summary with No-Load Adjustment									
2						Calibration Formulas				
3						601.908 Ideal Formula Number				
4	No load kwatt		Motor			639.613 Aug-18				
5	Peak kwatts	97.867	minutes			683.630 Sep-15				
6	Time No-Load kwatt		0.000	1631	kwatts	706.915 Jun 20.03			currently used	
7	Time Start-Up kwatts		0.000	minutes	heures					
8	Total Production time		10.89	hours	heures					
9	Average kwatt for day		Motor			No-Load Original reading				
10	Average Tonnage by formula				28.189 kwatts	New No-load reading			7.300 kwatts	
11					599.534 te/hre	599.534 New Formula			10.834 kwatts	
12	Tonnage by belt scale				5573.000 tonnes est				3.534 kwatts difference	
13	Total tonnage by GT analyzer =				5551.023 tonnes	6574.309 tonnes based on original formula				
14	Difference				21.977 tonnes	-1001.309 tonnes difference				
15	Percentage difference				0.394 %	-17.967 %				
16	Time of data	Actual Kwatt Reading	Count	Count	Conditioned tonnes/hr on conveyor	No-Load Reading	No-Load Time	No-Load Reading		
17	05/08/2003 6:16:26	-0.07618	1	0	0	0.400	05/08/2003 15:46:18	9.22264	9.711 Average kv	
18	05/08/2003 6:16:34	10.84231	0	0	10.842	179.824	05/08/2003 15:46:26	9.08926	0.748 Std dev	
19	05/08/2003 6:16:42	12.55725	0	0	12.557	231.932	05/08/2003 15:46:34	9.41319	10.834 1.5 std dev	
20	05/08/2003 6:16:50	14.48180	0	0	14.482	290.409	05/08/2003 15:46:42	10.15633	11.208 2.0 std dev	
21	05/08/2003 6:16:58	17.18760	0	0	17.188	372.625	05/08/2003 15:46:50	11.26152		
4905	05/08/2003 17:08:10	32.73644	0	0	32.736	845.077				
4906	05/08/2003 17:08:18	32.05952	0	0	32.070	824.812				
4907	05/08/2003 17:08:26	32.83171	0	0	32.832	847.972				
4908	05/08/2003 17:08:34	29.05694	0	0	29.097	734.491				
4909	05/08/2003 17:08:42	26.23870	0	0	26.239	647.643				
4910	05/08/2003 17:08:50	22.02756	0	0	22.028	519.687				
4911	05/08/2003 17:08:58	15.75848	0	0	15.758	329.201				
4912	05/08/2003 17:09:06	11.45207	0	0	11.452	198.351				
4913	05/08/2003 17:09:14	7.88879	1	0						
4914	05/08/2003 17:09:22	7.75541	1	0						
4915	05/08/2003 17:09:30	7.73635	1	0						
4916	05/08/2003 17:09:38	8.07934	1	0						
4917	05/08/2003 17:09:46	7.66013	1	0						
4918	05/08/2003 17:09:54	7.77446	1	0						
4919	05/08/2003 17:10:02	0.00004	1	0						
4920										
4921										
4922										

Figure 13f Daily Summary Showing Impact of No-Load Adjustment due to dirt build up at 3:20pm

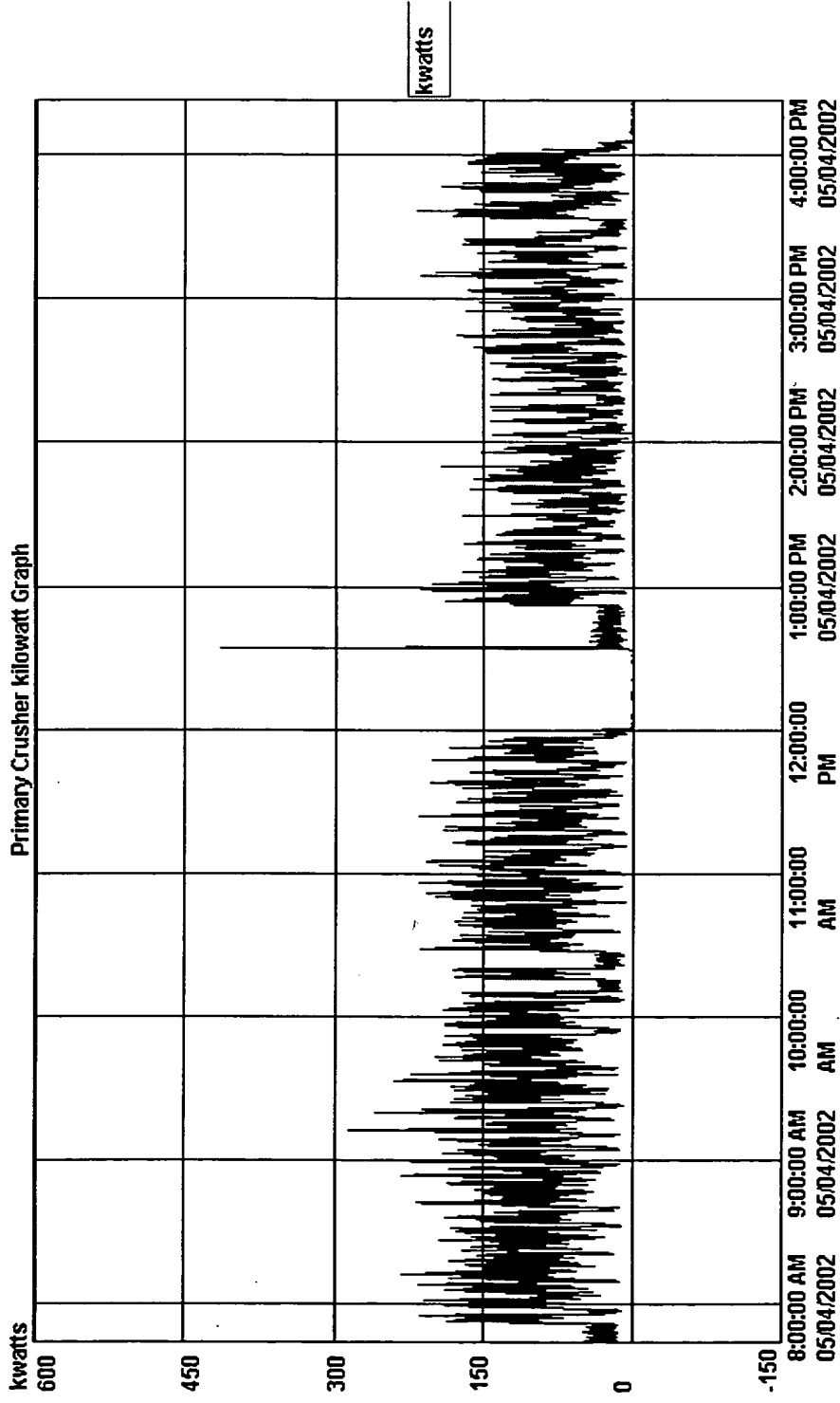


Figure 14: Typical Primary Crusher Graph

FIGURE 15

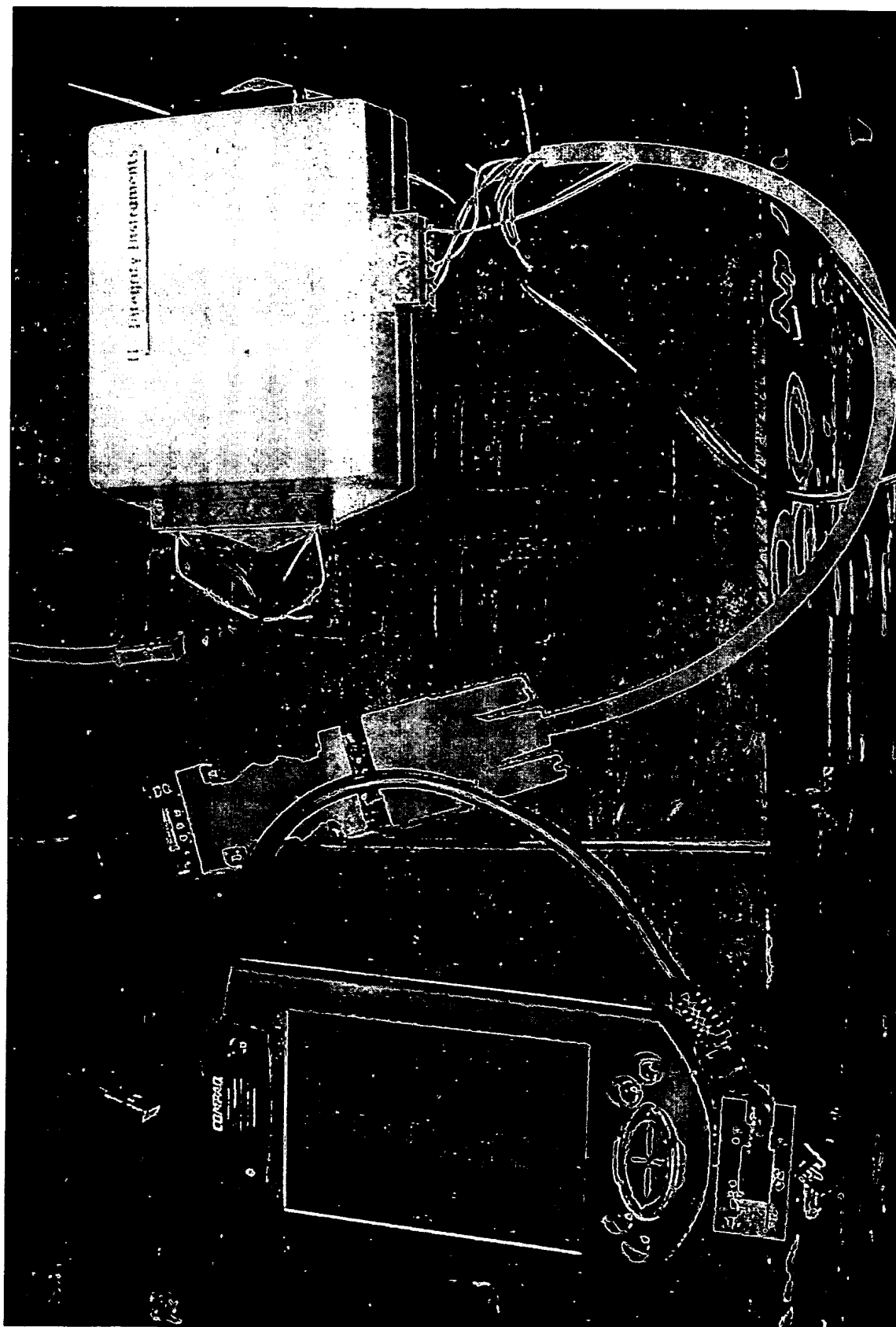
Typical Primary Crusher kwatt report

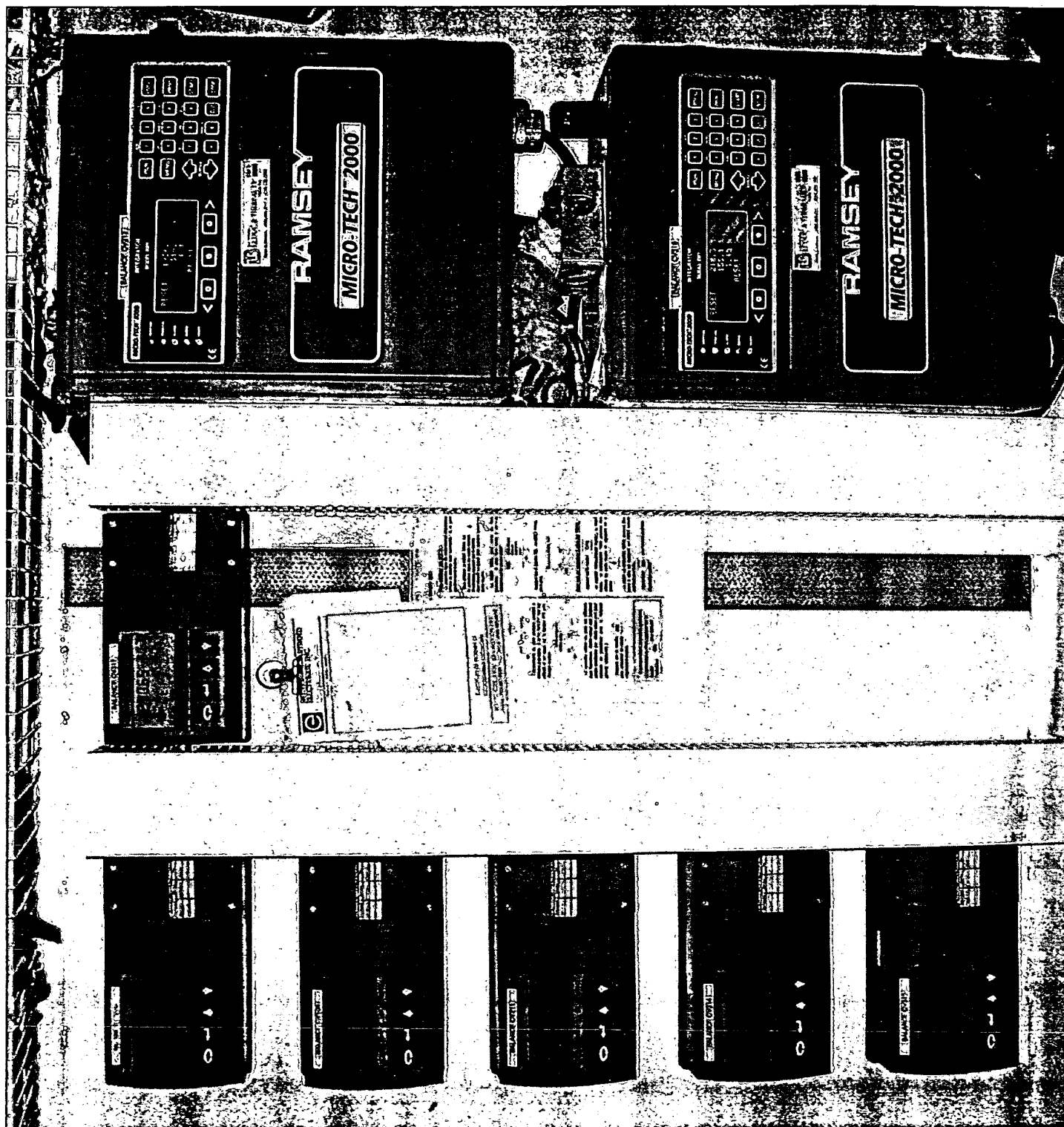
No load kwatt =	30.000 kwatts
Start up kwatts =	410.000 kwatts
Time No-Load kwatt	144.400 minutes
Time Start-Up kwatts	0.133 minutes
Total production time 10 hrs 23 min	10.383 hours
Total tonnes on Primary Conveyor Belt Scale	7713.0 tonnes
Average kwatt for day	91.785
Total kwatts crushing	731.906 kwatts
Total te/kwatt crushed	10.538 te/kwatt

Time of data Reading	Actual Kwatt Reading	Count No-Load	Count Over-load	Conditioned kwatt
05/04/2002 7:24:33	0.811	1	0	
05/04/2002 7:24:41	4.358	1	0	
05/04/2002 7:24:49	1.520	1	0	
05/04/2002 7:24:57	0.811	1	0	
05/04/2002 7:25:05	0.811	1	0	
05/04/2002 7:25:13	2.027	1	0	
05/04/2002 7:25:21	2.939	1	0	
05/04/2002 7:25:29	3.851	1	0	
05/04/2002 7:25:37	2.230	1	0	
05/04/2002 7:25:45	3.243	1	0	
05/04/2002 7:25:53	1.317	1	0	
05/04/2002 7:26:01	2.331	1	0	
05/04/2002 7:26:09	2.939	1	0	
05/04/2002 7:26:17	1.013	1	0	
05/04/2002 7:26:25	0.811	1	0	
05/04/2002 7:26:33	1.926	1	0	
05/04/2002 7:26:41	2.534	1	0	
05/04/2002 7:26:49	1.115	1	0	
05/04/2002 7:26:57	0.811	1	0	
05/04/2002 7:27:05	0.811	1	0	
05/04/2002 7:27:13	0.811	1	0	
05/04/2002 7:27:21	0.811	1	0	
05/04/2002 7:27:29	4.155	1	0	
05/04/2002 7:27:37	0.709	1	0	
05/04/2002 7:27:45	0.811	1	0	
05/04/2002 7:27:53	0.811	1	0	
05/04/2002 7:28:01	0.709	1	0	
05/04/2002 7:28:09	0.709	1	0	
05/04/2002 7:28:17	3.952	1	0	
05/04/2002 7:28:25	2.736	1	0	
05/04/2002 7:28:33	0.811	1	0	
05/04/2002 7:28:41	389.056	0	0	389.056
05/04/2002 7:28:49	53.306	0	0	53.306
05/04/2002 7:28:57	55.739	0	0	55.739
05/04/2002 7:29:05	51.178	0	0	51.178
05/04/2002 7:29:13	41.247	0	0	41.247

TYPICAL QUARRY Kwatts Tonnage report With TEMPERATURE Effect

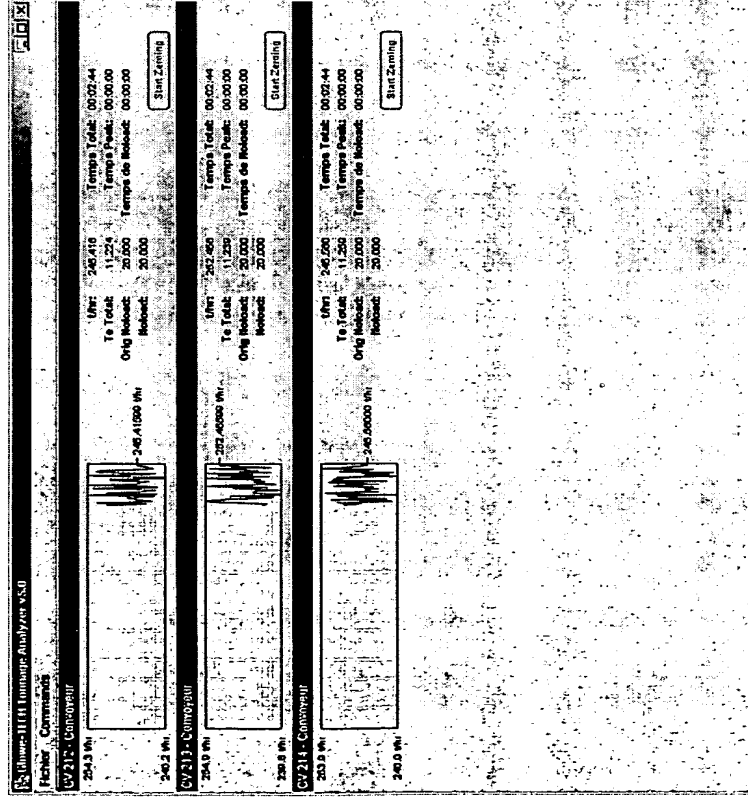
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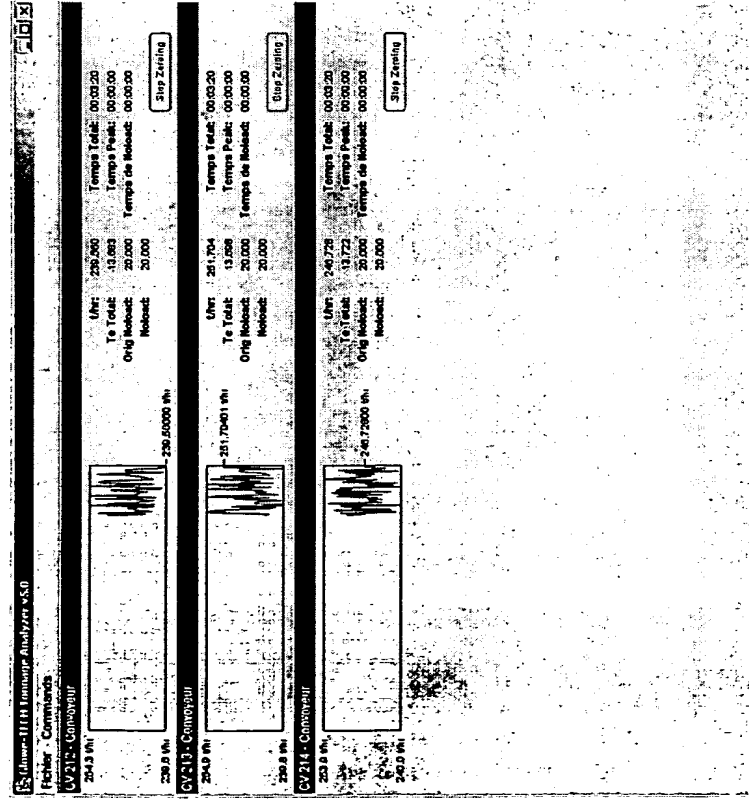
Glowe-Tech Tonnage Analyzer

- Real Time Program showing total tonnage, tph, production time, and No-Load time values



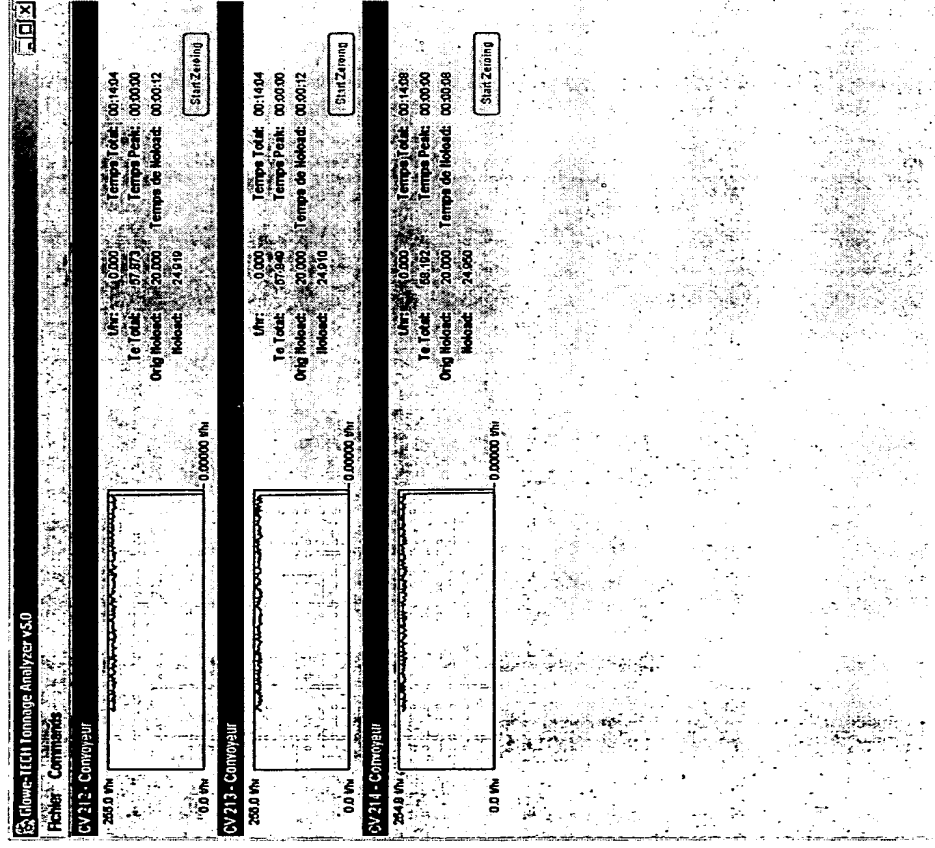
Glowe-Tech Tonnage Analyzer

- Zero test activated as shown in Red



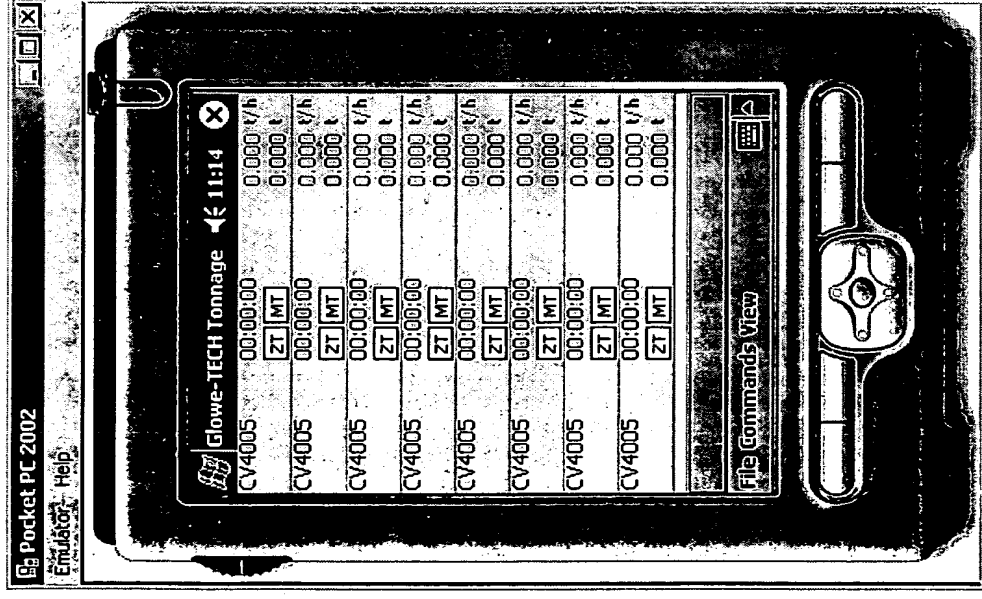
Glowe-Tech Tonnage Analyzer

- Zero test completed and program re-calibrated



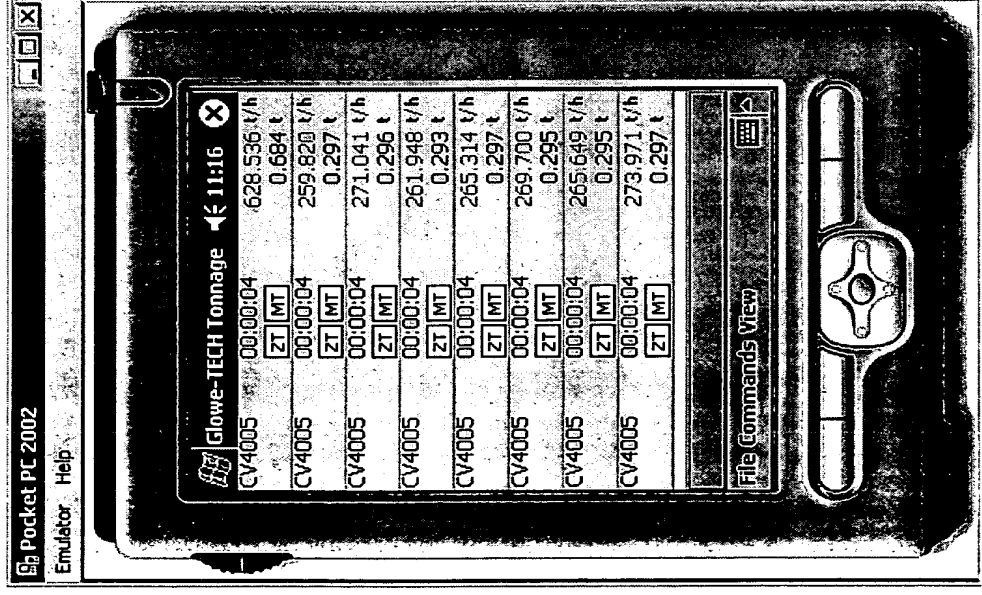
Glowe-Tech Tonnage Analyzer

- Startup showing 8 channels of data display for crusher or conveyors in Real Time mode



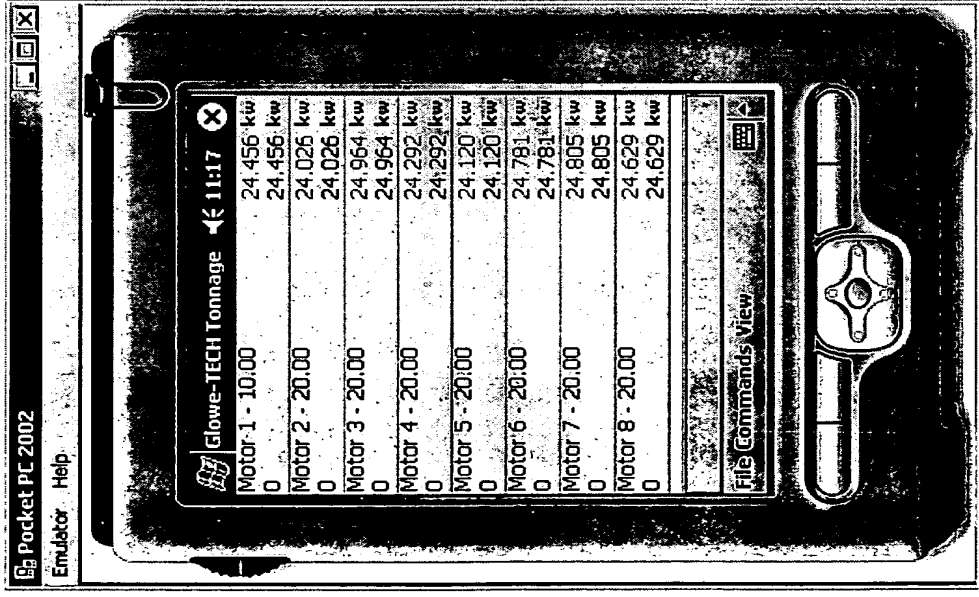
Glowe-Tech Tonnage Analyzer

- Running with tonnage values totalized and shown as tph, updated every second.



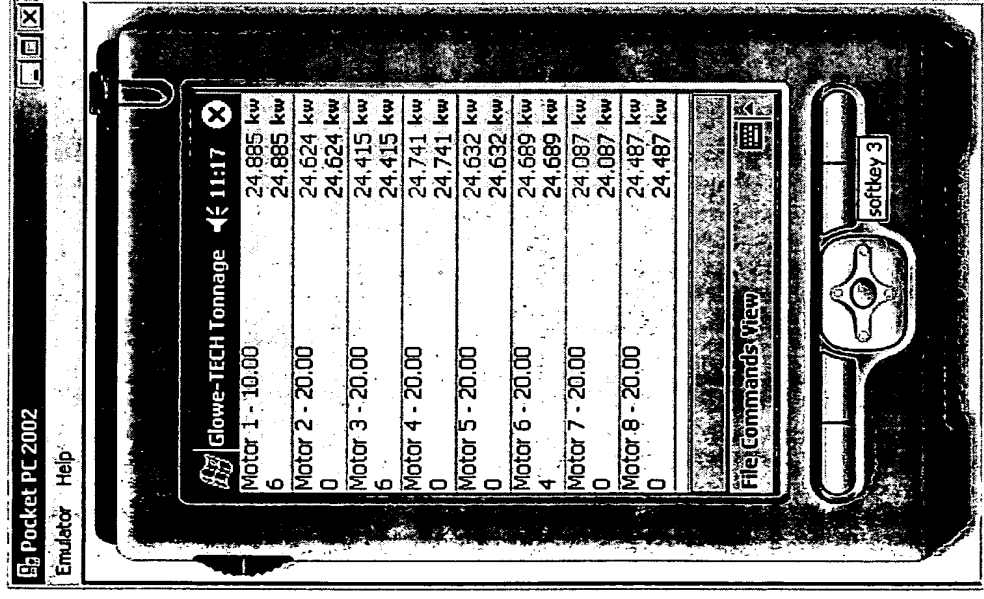
Glowe-Tech Tonnage Analyzer

- Crusher or conveyor Motor view with kwatt values displayed prior to Zero Test.



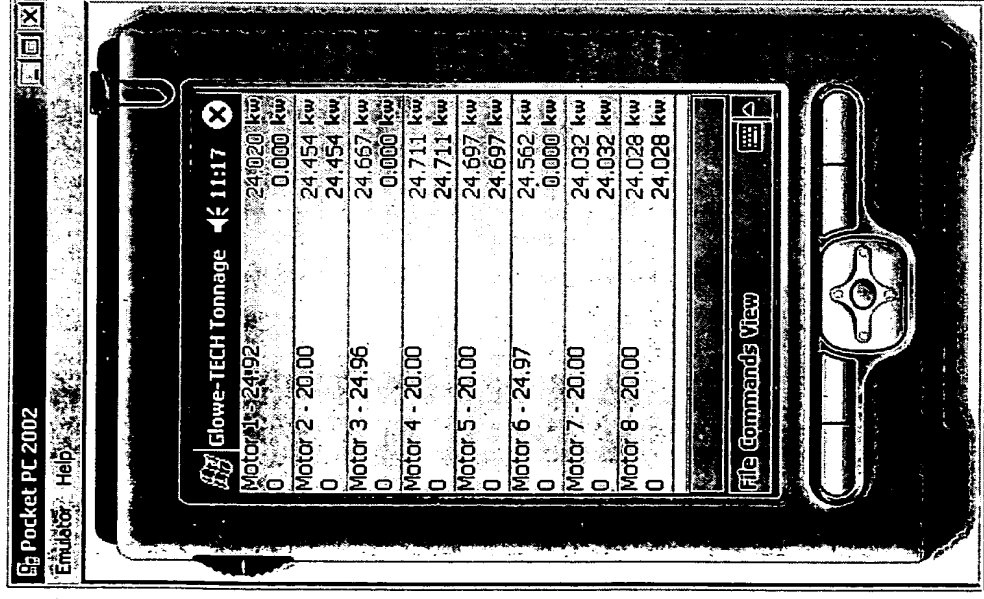
Glowe-Tech Tonnage Analyzer

- Motor view with kwatt values and a zero test in progress for motors 1, 3, and 6



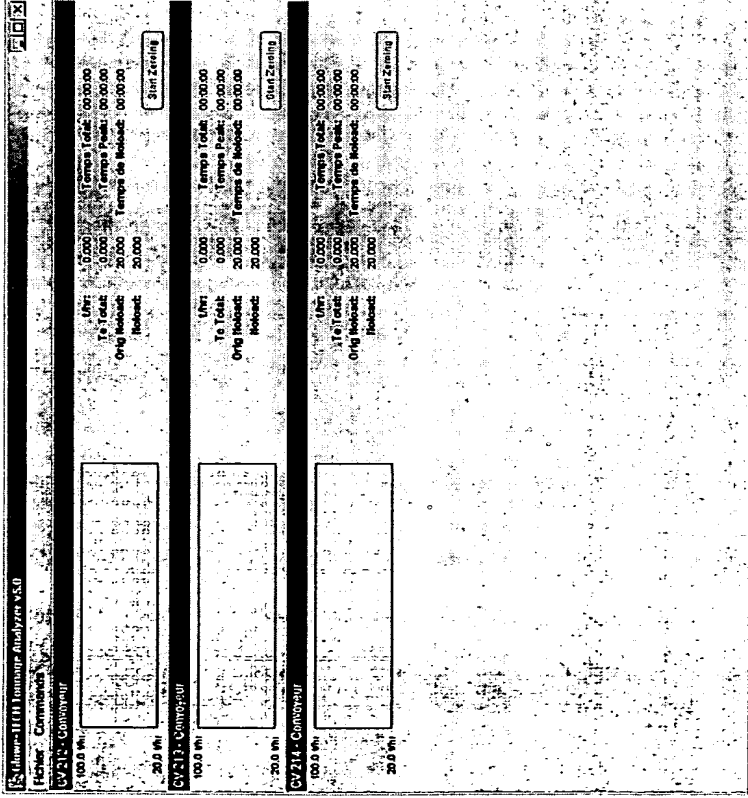
Glowe-Tech Tonnage Analyzer

- Motor view with kwatt values and finished zero tests with new No-load values for motors 1, 3, and 6



Glowe-Tech Tonnage Analyzer

- Program startup with graphic display of last 20 minutes of data in Real Time.



Glowe-Tech Tonnage Analyzer

- Daily Summary Report including Total tonnage, Production time, No-Load time and new No-load calibration value.

110903 124325.txt - Notepad

File Edit Format Help

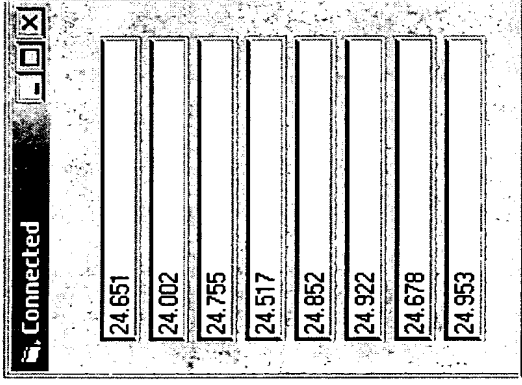
Start 11/09/03 12:27:28
End 11/09/03 12:43:22

11/09/03

Nom	Te Total	Temps de Production	Temps de NoLoad
CV 212	58.26376	00:14:12	24.91902
CV 213	57.84868	00:14:04	24.90978
CV 214	58.58227	00:14:16	24.95023

Glowe-Tech Tonnage Analyzer

- Screen showing raw data input coming from Data logger with values updated every 1 second with Analog Data Logger and every 4 seconds with ACR Data logger.



24.651
24.002
24.755
24.517
24.852
24.922
24.678
24.953